

15992 U.S. PTO  
033104

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Samuel Achilefu, Raghavan Rajagopalan,  
Richard B. Dorshow, Joseph E. Bugaj  
Title: Tissue-Specific Exogenous Optical Agents

Atty. Docket: MRD / 54DV

22388 U.S. PTO  
10/814404  
033104

**CERTIFICATE OF MAILING BY EXPRESS MAIL - 37 CFR 1.10**

'Express Mail' mailing label number: EV425512960US  
Date of Deposit: March 31, 2004

I certify that this paper or fee (along with the enclosures noted herein) is being deposited with the United States Postal Service 'Express Mail Post Office to Addressee' service under 37 CFR 1.10 on the above date and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

*Kenneth Eads*  
By: Kenneth Eads (person mailing paper)

**UTILITY PATENT APPLICATION TRANSMITTAL**

*Mail Stop Patent Application  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450*

This is a request for filing, under 37 CFR § 1.53(b), a(n):

- ☐ Original (non-provisional) application.
- ☒ **Divisional of prior application** Serial No. 09/688,949, filed on October 16, 2000.
- ☐ Continuation of prior application Serial No. \_\_, filed on \_\_.
- ☐ Continuation-in-part of prior application Serial No. \_\_, filed on \_\_.

For Divisional and Continuation applications ONLY:

- ☒ **Copy of Executed Declaration, Power of Attorney and Petition Form** from parent application is enclosed (as noted below in Enclosures).
- ☒ **Incorporation by Reference:** The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied herewith, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

For all Divisional, Continuation and Continuation-in-part applications:

- ☐ Small Entity Status was requested in the prior application, and small entity status is still proper and desired.
- ☒ This application is assigned to MALLINCKRODT INC. of 675 McDonnell Boulevard, St. Louis, Missouri 63134 by virtue of an earlier assignment filed in the prior application at Reel 011251, Frame 0251.

**PRELIMINARY AMENDMENT/CALCULATION OF FEES**

- ☐ Please cancel claims \_\_ without prejudice, and prior to calculating the fees. \_\_ total claim(s), of which \_\_ is(are) independent, is(are) pending after the amendment.



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/688,949	10/16/2000	Samuel Achilefu	MRD / 54	9967

7590 08/08/2002  
David E. Jefferies  
Wood, Herron & Evans, L.L.P.  
2700 Carew Tower  
441 Vine Street  
Cincinnati, OH 45202-2917

EXAMINER

JONES, DAMERON LEVEST

ART UNIT	PAPER NUMBER
----------	--------------

1616

DATE MAILED: 08/08/2002

7

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/688,949

Applicant(s)

ACHILEFU ET AL.

Examiner

D. L. Jones

Art Unit

1616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 1/23/01; 3/30/01; 7/3/01; and 7/12/02.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 6 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4, 5 and 7-9 is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 10 is/are rejected.
- 7) ☒ Claim(s) 11-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2&3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## ACKNOWLEDGMENTS

1. The Examiner acknowledges receipt of Paper No. 2, filed 1/23/01, wherein the specification and claims 1-6 were amended.

Note: Claims 1-14 are pending.

## APPLICANT'S INVENTION

2. Applicant's invention is directed indole compositions as set forth in independent claim 1 and uses thereof.

## RESPONSE TO APPLICANT'S ELECTION

3. Applicant's election of Group I (claims 1-14) with traverse in Paper No. 6, filed 7/12/02, is acknowledged. The traversal is on the grounds that the restriction is improper since all the claims are directed to the structure designated as formula 1. Furthermore, Applicant goes on assert that unity of invention exists in the instant application and that all the compounds have the same utility. This is found non-persuasive because as set forth in the restriction requirement, the inventions depending on the variable values classify differently; thus, there is no common core. Also, species of one group neither anticipate nor render obvious species of another group. Thus, the inventions are separate and distinct and require a different search. Hence, the restriction requirement is still deemed proper and is therefore made FINAL.

Notes: (1) Applicant elected Group I (claims 1-14) directed to compounds/compositions and uses thereof comprising a 5-membered ring containing

Art Unit: 1616

one nitrogen and one sulfur atom wherein W1 = sulfur; R3 - R7 = hydrogen; and Y1 = hydrogen. (2) The search was not extended beyond Applicant's elected species because prior art was found which could be used to reject the claims.

#### **WITHDRAWN CLAIMS**

4. Claims 3 and 6 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention/species.

#### **112 REJECTIONS**

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 as written is ambiguous because it is unclear what 'physiological function monitoring' Applicant intends to be encompassed in the instant invention. Applicant is respectfully requested to clarify such terminology and point to page and line numbers for such support.

#### **103 REJECTIONS**

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1616

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mifune et al (US Patent No. 5,780,218).

**Mifune et al** disclose a compound (column 3, Compound 13) that renders obvious Applicant's elected species. The species of Mifune et al renders obvious Applicant's elected species when R3 – R7 = hydrogen; W1 = sulfur; and Y1 = C1 alkyl (methyl) because it would be obvious to one of ordinary skill in the art to substitute a hydrogen for a methyl on a known compound since it is well established that the replacement of methyl for hydrogen on a known compound is not a patentable modification absent unexpected or unobvious results (*In re Woods*, 582 F.2d 638, 199 USPQ 137 (CCPA 1978)).

#### CLAIM OBJECTIONS

9. Claims 11-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 11-14 are allowable over the prior art of record because the prior art neither anticipates nor renders obvious a method of performing a diagnostic or therapeutic procedure wherein a mammal is administered an effective amount of an

indole composition wherein W1 = sulfur; R3 – R7 = hydrogen; and Y1 = hydrogen. The search was not extended beyond the elected species.


#### **ALLOWABLE CLAIMS**

10. Claims 4, 5, and 7-9 are allowable over the prior art of record because the prior art neither anticipates nor renders obvious a method of performing a diagnostic or therapeutic procedure wherein a mammal is administered an effective amount of an indole composition wherein W1 = sulfur; R3 – R7 = hydrogen; and Y1 = hydrogen. The search was not extended beyond the elected species.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. L. Jones whose telephone number is (703) 308-4640. The examiner can normally be reached on Mon.-Fri. (alternate Mon.), 6:45 a.m. - 4:15 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jose' Dees can be reached on (703) 308- 4628. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4556 for regular communications and (703) 308-4556 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1235.

  
D. L. Jones  
Primary Examiner  
Art Unit 1616

August 5, 2002

SUBSTITUTE FORM PTO-1449  
(MODIFIED)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICEATTY. DOCKET NO.  
MRD/54SERIAL NO.  
09/688,944

JUL 03 2001

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANTAPPLICANT  
Samuel Achilefu, et al.FILING DATE  
October 16, 2000GROUP  
2877

(37 CFR 1.98(b))

(Use several sheets if necessary)

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL		PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A.A						
	A.B						
	A.C						
	A.D						
	A.E						
	A.F						
	A.G						
	A.H						
	A.I						
	A.J						
	A.K						

## FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS

		DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION (YES/NO)
	A.L						
	A.M						
	A.N						
	A.O						
	A.P						
	A.Q						

## OTHER DOCUMENTS (Including Author, Title, Date, Place of Publication)

107	A.R	L. Hansen et al., <u>Synthesis of the Sulphonate and Phosphonate Derivatives of Mercaptoacetyltryglycine. X-Ray Crystal Structure of Na<sub>2</sub>[ReO(Mercaptoacetylglucylglycyl-Aminomethanesulphonate)]·3H<sub>2</sub>O</u> , Metal-Based Drugs, Vol. 1, No. 1, 1993, 31-39.
107	A.S	G. Muller et al.(ed.), <u>Medical Optical Tomography, Functional Imaging and Monitoring</u> , SPIE Optical Engineering Press, The International Society of Optical Engineering, Bellingham, WA, 1993.
107	A.T	P.L. Southwick et al., <u>"One Pot" Fischer Synthesis of (2, 3, 3-Trimethyl-3-H-Indol-5-yl)-Acetic Acid. Derivatives as Intermediates for Fluorescent Biolabels.</u> , Org. Prep. Proced. Int. Briefs, Vol. 20, No. 3, 1988, 279-284.

EXAMINER

DATE CONSIDERED

R. Jones

8/5/02

EXAMINER: Initial if citation considered, whether or not in conformance. Draw line through citation only if not in conformance and not considered. Include a copy of this form with next communication to applicant.



SUBSTITUTE FORM PTO-1449  
(MODIFIED)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICEATTY. DOCKET NO.  
MRD/54SERIAL NO.  
09/688,949INFORMATION DISCLOSURE  
STATEMENT BY APPLICANTAPPLICANT  
Samuel Achilefu, et al.FILING DATE  
October 16, 2000GROUP  
2977

(37 CFR 1.98(b))

(Use several sheets if necessary)

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE (APPROPRIATE)
	A.A					
	A.B					
	A.C					
	A.D					
	A.E					
	A.F					
	A.G					
	A.H					
	A.I					
	A.J					
	A.K					

## FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS

	DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION (YES/NO)
	A.L					
	A.M					
	A.N					
	A.O					
	A.P					
	A.Q					

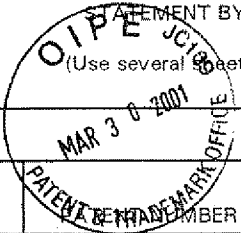
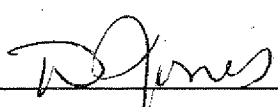
## OTHER DOCUMENTS (Including Author, Title, Date, Place of Publication)

A.R	Christopher C. Baker, M.D., <u>Epidemiology of Trauma Deaths</u> , Amer. Jour. of Surg., Vol. 140, 1980, pp. 144-150.
A.S	John Baldas et al., <u>Preparation, HPLC Studies and Biological Behaviour of <sup>99m</sup>Tc- and <sup>99m</sup>TcN-radiopharmaceuticals Based on Quinoline Type Ligands</u> , Nucl. Med. Biol., Vol. 19, No. 4, 1992, pp. 491-496.
A.T	Frank B. Cerra, M.D., <u>Multiple Organ Failure Syndrome</u> , New Horizons: Multiple Organ Failure, Society of Critical Care Medicine, 1989, pp. 1-24.

EXAMINER

DATE CONSIDERED

EXAMINER: initial if citation considered, whether or not in conformance. Draw line through citation only if not in conformance and not considered. Include a copy of this form with next communication to applicant.

SUBSTITUTE FORM PTO-1449 (MODIFIED)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY. DOCKET NO. MRD/54	SERIAL NO. 09/688,949
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)  <div style="text-align: center;">  </div>				APPLICANT Samuel Achilefu, et al.	
				FILING DATE October 16, 2000	
U.S. PATENT DOCUMENTS					
EXAMINER INITIAL	B.A.	B.B.	B.C.	B.D.	B.E.
	B.F.	B.G.	B.H.	B.I.	B.J.
	B.K.				
FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS					
		DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS
	B.L.				
	B.M.				
	B.N.				
	B.O.				
	B.P.				
	B.Q.				
OTHER DOCUMENTS (Including Author, Title, Date, Place of Publication)					
B.R.	Peter L. Choyke et al., <u>Hydrated clearance of gadolinium-DTPA as a measurement of glomerular filtration rate</u> , Kidney International, Vol. 41, 1992, pp. 1595-1598.				
B.S.	Cdr. P.D. Doolan, MC, USN et al., <u>A Clinical Appraisal of the Plasma Concentration and Endogenous Clearance of Creatinine</u> , Amer. Jour. of Med., Vol. 32, 1962, pp. 65-79.				
B.T.	Richard B. Dorshow et al., <u>Monitoring physiological function by detection of exogenous fluorescent contrast agents</u> , Optical Diagnostics of Biological Fluids IV, A. Priezzhev and T. Asakura, Eds., Prodedings of SPIE 1999, Vol. 3599, pp. 2-8.				
EXAMINER  			DATE CONSIDERED  8/5/02		
EXAMINER: Initial if citation considered, whether or not in conformance. Draw line through citation only if not in conformance and not considered. Include a copy of this form with next communication to applicant.					

SUBSTITUTE FORM PTO-1449  
(MODIFIED)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICEATTY. DOCKET NO.  
MRD/54SERIAL NO.  
09/688,949INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)

(37 CFR 1.98(b))

APPLICANT  
Samuel Achilefu, et al.FILING DATE  
October 16, 2000GROUP  
2877

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	CLASSIFICATION DATE APPROPRIATE
	C.A					
	C.B					
	C.C					
	C.D					
	C.E					
	C.F					
	C.G					
	C.H					
	C.I					
	C.J					
	C.K					

## FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS

	DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION (YES/NO)
	C.L					
	C.M					
	C.N					
	C.O					
	C.P					
	C.Q					

## OTHER DOCUMENTS (Including Author, Title, Date, Place of Publication)

	C.R	Richard B. Dorshow et al., Noninvasive Fluorescence Detection of Hepatic and Renal Function, Journal of Biomedical Optics, Vol. 3, No. 3, 1998, pp. 340-345.
	C.S	James H. Flanagan, Jr. et al., Near-Infrared Heavy-Atom-Modified Fluorescent Dyes for Base-Calling in DNA-Sequencing Applications Using Temporal Discrimination, Anal. Chem., Vol. 70, No. 13, 1998, pp. 2676-2684.
	C.T	P. Guesry et al., Measurement of glomerular filtration rate by fluorescent excitation of non-radioactive meglumine iothalamate, Clinical Nephrology, Vol. 3, No. 4, 1975, pp. 134-138.

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not in conformance. Draw line through citation only if not in conformance and not considered. Include a copy of this form with next communication to applicant.

SUBSTITUTE FORM PTO-1449  
(MODIFIED)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICEATTY. DOCKET NO.  
MRD/54SERIAL NO.  
09/688,9INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)

(37 CFR 1.98(b))

APPLICANT  
Samuel Achilefu, et al.FILING DATE  
October 16, 2000GROUP  
2877

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL		PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE APPROPRIATE
	D.A						
	D.B						
	D.C						
	D.D						
	D.E						
	D.F						
	D.G						
	D.H						
	D.I						
	D.J						
	D.K						

## FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS

		DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION (YES/NO)
	D.L						
	D.M						
	D.N						
	D.O						
	D.P						
	D.Q						

## OTHER DOCUMENTS (Including Author, Title, Date, Place of Publication)

D.R	John Bernard Henry, M.D., <u>Clinical Diagnosis and Management by Laboratory Methods</u> , W.B. Saunders Company, 17th Ed., 1984, pp. vii-1502.
D.S	Richard Lewis et al., <u>Comparative Evaluation of Urographic Contrast Media, inulin, and <sup>99m</sup>Tc-DTPA Clearance Methods for Determination of Glomerular Filtration Rate in Clinical Transplantation</u> , Transplantation, Vol. 48, No. 5, 1989, pp. 790-796.
D.T	S. Lundqvist et al., <u>Iohexol Clearance for Renal Function Measurement in Gynaecologic Cancer Patients</u> , Acta Radiologica, Vol. 37, 1996, pp. 582-586.

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not in conformance. Draw line through citation only if not in conformance and not considered. Include a copy of this form with next communication to applicant.

SUBSTITUTE FORM PTO-1449  
(MODIFIED)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICEATTY. DOCKET NO.  
MRD/54SERIAL NO.  
09/688,949INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)

(37 CFR 1.98(b))

APPLICANT  
Samuel Achilefu, et al.FILING DATE  
October 16, 2000GROUP  
2877/10

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL		PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	AGING DATE IF APPROPRIATE
	E.A						
	E.B						
	E.C						
	E.D						
	E.E						
	E.F						
	E.G						
	E.H						
	E.I						
	E.J						
	E.K						

## FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS

		DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION (YES/NO)
	E.L						
	E.M						
	E.N						
	E.O						
	E.P						
	E.Q						

## OTHER DOCUMENTS (Including Author, Title, Date, Place of Publication)

	E.R	Roland Muller-Suur et al., <u>Glomerular Filtration and Tubular Secretion of MAG-3 in the Rat Kidney</u> , The Journal of Nuclear Medicine, Vol. 30, 1989, pp. 1986-1991.
	E.S	Dennis L. Nosco et al., <u>Chemistry of technetium radiopharmaceuticals 1: Chemistry behind the development of technetium-99m compounds to determine kidney function</u> , Coordination Chemistry Reviews, Vol. 184, 1999, pp. 91-123.
	E.T	Carlos A. Rabito et al., <u>Renal Function in Patients at Risk of Contrast Material-Induced Acute Renal Failure: Noninvasive, Real-Time Monitoring</u> , Radiology, Vol. 186, No. 3, 1993, pp. 851-854.

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not in conformance. Draw line through citation only if not in conformance and not considered. Include a copy of this form with next communication to applicant.

SUBSTITUTE FORM PTO-1449  
(MODIFIED)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICEATTY. DOCKET NO.  
MRD/54SERIAL NO.  
09/688,900INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)

APPLICANT  
Samuel Achilefu, et al.FILING DATE  
October 16, 2000GROUP  
2877

(37 CFR 1.98(b))

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
F.A						
F.B						
F.C						
F.D						
F.E						
F.F						
F.G						
F.H						
F.I						
F.J						
F.K						

## FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS

	DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION (YES/NO)
F.L						
F.M						
F.N						
F.O						
F.P						
F.Q						

## OTHER DOCUMENTS (Including Author, Title, Date, Place of Publication)

F.R	G. Regel, M.D. et al., Treatment Results of Patients with Multiple Trauma: An Analysis of 3406 Cases Treated between 1972 and 1991 at a German Level 1 Trauma Center, The Journal of Trauma, Vol. 38, No. 1, 1995, pp. 70-77.
F.S	G.A. Reynolds et al., Stable Heptamethine Pyrylium Dyes That Absorb in the Infrared, J. Org. Chem., Vol. 42, No. 5, 1977, pp. 885-888.
F.T	Francoise Roch-Ramel et al., Renal excretion and tubular transport of organic anions and cations, Oxford University Press, N.Y., Handbook of Physiology, Sec. 8, Neurological Physiology, Vol. II, E.E. Windhager, Ed., 1992, pp. 2189-2262.

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not in conformance. Draw line through citation only if not in conformance and not considered. Include a copy of this form with next communication to applicant.

SUBSTITUTE FORM PTO-1449  
(MODIFIED)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICEATTY. DOCKET NO.  
MRD/54SERIAL NO.  
09/688,940INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)

(37 CFR 1.98(b))

APPLICANT  
Samuel Achilefu, et al.FILING DATE  
October 16, 2000GROUP  
2877 10

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
G.A						
G.B						
G.C						
G.D						
G.E						
G.F						
G.G						
G.H						
G.I						
G.J						
G.K						

## FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS

	DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION (YES/NO)
G.L						
G.M						
G.N						
G.O						
G.P						
G.Q						

## OTHER DOCUMENTS (Including Author, Title, Date, Place of Publication)

G.R	Morgan Sohtell et al., <u>FITC-inulin as a kidney tubule marker in the rat</u> , Acta Physiol Scand, Vol. 119, 1983, pp. 313-316.
G.S	Carl E. Speicher, M.D., <u>The Right Test, A Physician's Guide to Laboratory Medicine</u> , W.B. Saunders Company, Harcourt, Brace, Jovanovich, Inc., 1990, pp v - 174.
G.T	W. Newlon Tauxe, <u>Tubular Function</u> , Nuclear Medicine in Clinical Urology and Nephrology, Appleton-Century-Crofts, Prentice-Hall, Inc., 1985, pp. 77-105.

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not in conformance. Draw line through citation only if not in conformance and not considered. Include a copy of this form with next communication to applicant.

RECEIVED  
APR 05 2002  
TECH CENTER 1600/2002

SUBSTITUTE FORM PTO-1449  
(MODIFIED)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICEATTY. DOCKET NO.  
MRD/54SERIAL NO.  
09/688,944INFORMATION DISCLOSURE  
STATEMENT BY APPLICANTAPPLICANT  
Samuel Achilefu, et al.

(37 CFR 1.98(b))

(Use several sheets if necessary)

FILING DATE  
October 16, 2000GROUP  
2877/61

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
H.A.						
H.B.						
H.C.						
H.D.						
H.E.						
H.F.						
H.G.						
H.H.						
H.I.						
H.J.						
H.K.						

## FOREIGN PATENTS OR PUBLISHED FOREIGN PATENT APPLICATIONS

	DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION (YES/NO)
H.L.						
H.M.						
H.N.						
H.O.						
H.P.						
H.Q.						

## OTHER DOCUMENTS (Including Author, Title, Date, Place of Publication)

H.R.	Nicholas L. Tilney, M.D., <u>Acute Renal Failure in Surgical Patients, Causes, Clinical Patterns, and Care</u> , Surgical Clinics of North America, Vol. 63, No. 2, 1983, pp. 357-377.
H.S.	Michael F. Tweedle, Ph.D. et al., <u>A Noninvasive Method for Monitoring Renal Status at Bedside</u> , Investigative Radiology, Vol. 32, No. 12, 1997, pp. 802-805.
H.T.	Bruce E. VanZee, M.D. et al., <u>Renal Injury Associated with Intravenous Pyelography in Nondiabetic and Diabetic Patients</u> , Annals of Internal Medicine, Vol. 89, 1978, pp. 51-54.

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not in conformance. Draw line through citation only if not in conformance and not considered. Include a copy of this form with next communication to applicant.



<b>Notice of References Cited</b>	Application/Control No. 09/688,949	Applicant(s)/Patent Under Reexamination ACHILEFU ET AL.	
	Examiner D. L. Jones	Art Unit 1616	Page 1 of 1

**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-5,780,218	07-1998	Mifune et al	430/599
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

**FOREIGN PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

**NON-PATENT DOCUMENTS**

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/688,949	10/16/2000	Samuel Achilefu	MRD / 54	9967

7590 01/29/2003  
David E. Jefferies  
Wood, Herron & Evans, L.L.P.  
2700 Carew Tower  
441 Vine Street  
Cincinnati, OH 45202-2917

EXAMINER

JONES, DAMERON LEVEST

ART UNIT PAPER NUMBER

1616

DATE MAILED: 01/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

RECEIVED  
2003 FEB -3 PM 3:12  
WOOD, HERRON & EVANS

**Office Action Summary****Application No.**

09/688,949

**Applicant(s)**

ACHILEFU ET AL.

**Examiner**

D. L. Jones

**Art Unit**

1616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 November 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2 and 4-14 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5, 7-11, 13, and -14 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/11/02 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## ACKNOWLEDGMENTS

1. The Examiner acknowledges receipt of Paper No. 8, filed 11/11/022, wherein claim 1 was amended and claim 3 was canceled.

**Note:** Claims 1, 2, and 4-14 are pending.

## RESPONSE TO APPLICANT'S ARGUMENTS/AMENDMENTS

2. Applicant's arguments with respect to claims 1, 2, and 10 have been considered but are moot in view of the new ground(s) of rejection.

**Note:** It is duly noted that Applicant is requesting that even if the elected species (composition) is found, the search of the method claims should continue beyond the elected species.

The request is denied. The compounds used in the method claims classify differently based on the variable definitions (this is true for the composition claims as well). Thus, the method claims will be examined like the composition claims, especially since the restriction requirement includes both the composition and the method claims in the groups.

## WITHDRAWN CLAIMS

3. Claims 3 and 6 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention/species.

Art Unit: 1616

## NEW GROUNDS OF REJECTION

### 102 Rejection

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 4, 5, 7-11, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Durmaz et al (Arzneimittel-Forschung (1998), Vol. 48, No. 12, pp. 1179-1184).

**Durmaz et al** disclose the effects of benzimidazole, imidazole, and benzothiazole derivatives on liver and renal functions. The compounds were administered to Wistar rats orally, intramuscularly, or intravenously and blood samples taken as designated intervals. In particular, Durmaz et al disclose the compound 3-ethyl benzothiazolium and uses thereof which is encompassed in Applicant's invention when W1 = sulfur; R3-R7 = hydrogen; and Y1 is alkyl (see entire document, especially, abstract; pages 1180-1181, 'Materials and methods'; page 1180, Figure 1, Compound 3; page 1181; 'In vivo effects of the compounds' and 'Effects of compound 3 on the biochemical parameters').

**Note:** It should not be construed that the search has been extended over the full scope of the claims because of the above 102 rejection of a species that is not Applicant's elected species. While searching for Applicant's elected species, the above species was found. Thus, only Applicant's elected species and the species wherein W1 = sulfur; R3-R7 = hydrogen; and Y1 = alkyl have been examined.

Art Unit: 1616

**103 Rejection**

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 2, 4, 5, 7-11, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Durmaz et al (Arzneimittel-Forschung (1998), Vol. 48, No. 12, pp. 1179-1184).

**Durmaz et al** disclose the effects of benzimidazole, imidazole, and benzothiazole derivatives on liver and renal functions. The compounds were administered to Wistar rats orally, intramuscularly, or intravenously and blood samples taken at designated intervals. In particular, Durmaz et al disclose the compound 3- ethyl-benzothiazolium complex that is encompassed in Applicant's invention when W1 = sulfur; Y1 = ethyl; and R3-R7 = hydrogen. Hence, while Durmaz et al disclose a 3-ethyl-benzothiazolium complex, the reference fails to disclose a benzothiazolium complex wherein Applicant's variables R3 –R7 and Y1 are all hydrogen (see entire document, especially, abstract; pages 1180-1181, 'Materials and methods'; page 1180, Figure 1, Compound 3; page 1181; 'In vivo effects of the compounds' and 'Effects of compound 3 on the biochemical parameters').

It would be have been obvious to one of ordinary skill in the art at the time the invention was made that the species of Durmaz et al renders obvious Applicant's

Art Unit: 1616

elected species (R3-R7 = hydrogen; W1 = sulfur; and Y1 = hydrogen) because the skilled practitioner would recognize that the substitution of a hydrogen for a lower alkyl on a known compound is within the skill of an practitioner in the art. Furthermore, the artisan would recognize that the replacement of hydrogen for a lower alkyl on a known compound is not a patentable modification absent unexpected or unobvious results.

### CLAIM OBJECTIONS

8. Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Note:** Claim 12 is distinguished over the prior art of record because the prior art neither anticipates nor renders obvious a method of cardiac function monitoring comprising administer a compound as set forth in independent claim 4 wherein W1 = sulfur; R3-R7 = hydrogen; and Y1 = hydrogen.

### COMMENTS/NOTES


9. It should be noted that the rejection over Mifune et al (US Patent No. 5,780,218) was withdrawn because Applicant amended the claim to incorporate that the composition is a pharmaceutical. Hence, the term 'pharmaceutical' as used in the preamble requires that the composition be capable of use as a pharmaceutical.

Art Unit: 1616

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. L. Jones whose telephone number is (703) 308-4640. The examiner can normally be reached on Mon.-Fri. (alternate Mon.), 6:45 a.m. - 4:15 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jose' Dees can be reached on (703) 308- 4628. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4556 for regular communications and (703) 308-4556 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1235.

  
D. L. Jones  
Primary Examiner  
Art Unit 1616

January 23, 2003



**Notice of References Cited**

Application/Control No.

09/688,949

Applicant(s)/Patent Under

Reexamination

ACHILEFU ET AL.

Examiner

D. L. Jones

Art Unit

1616

Page 1 of 1

**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-			
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

**FOREIGN PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

**NON-PATENT DOCUMENTS**

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Durmaz et al (1998), Arzneimittel-Forschung, Vol. 48, No. 12, pp. 1179-1184.
	V	
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.